

WHAT IS CLAIMED IS:

1. A method for maintaining a communication connection during a cell
reselection, the method comprising:
 - communicating in a first operating mode;
 - 5 monitoring communication conditions, while operating in the first operating
mode;
 - determining an approximate time when the communication conditions are
consistent with executing a reselection from a first cell to a second cell;
 - switching from a first mode of communication to a second mode of
10 communication prior to the determined approximate time for reselection; and
 - executing a handover from a first cell to a second cell, while in the second
operating mode.
2. A method in accordance with claim 1 further comprising switching from the
15 second operating mode to the first operating mode after handover is completed.
3. A method in accordance with claim 1 wherein the first operating mode does
not maintain a communication connection throughout a cell reselection.
- 20 4. A method in accordance with claim 3 wherein the first operating mode
attempts to establish a communication connection with a second cell after the
communication connection with the first cell is dropped.
5. A method in accordance with claim 1 wherein the first operating mode
25 includes a packet data communication mode.
6. A method in accordance with claim 5 wherein the packet communication
mode uses a communication protocol conforming to at least one of a general packet
radio service (GPRS) standard and an enhanced data global evolution (EDGE)
30 standard.

7. A method in accordance with claim 5 wherein the at least some of the packets of data communicated in the packet data communication mode include packetized voice data.

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8. A method in accordance with claim 7 wherein the voice data is communicated as part of a push to talk (PTT) call session.

9. A method in accordance with claim 7 wherein the voice data is communicated
10 as part of a voice over internet protocol (VoIP) call session.

10. A method in accordance with claim 1 wherein the second operating mode maintains a communication connection throughout the handover.

11. A method in accordance with claim 10 wherein the second mode establishes a
15 communication connection with the second cell prior to terminating the communication connection with the first cell during reselection.

12. A method in accordance with 11 wherein the data flow associated with a
20 communication is routed via the communication connection with the second cell prior to terminating the communication connection with the first cell during reselection.

13. A method in accordance with claim 1 wherein the second operating mode includes a circuit switched connection.

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14. A method in accordance with claim 13 wherein the circuit switched connection is a high speed circuit switched data (HSCSD) connection.

15. A method in accordance with claim 1 wherein monitoring communication
30 conditions includes measuring the quality of signals received from a serving cell

including the first cell, and measuring the quality of the signals received from one or more neighboring cells including the second cell.

16. A method in accordance with claim 15 wherein determining a time when
5 conditions are consistent with executing a handover includes comparing at least some of the signal quality measurements of the signals received from the serving cell with at least one of a predetermined threshold and one or more of the signal quality measurements of the signals received from the one or more neighboring cells.

10 17. A method in accordance with claim 15 wherein at least some of the signal quality measurements includes a received signal strength indicator (RSSI).

18. A communication controller comprising:
a multi-mode controller;
15 a cell reselection predictor coupled to the multi-mode controller; and
a handover controller coupled to the multi-mode controller;
wherein the multi-mode controller is adapted for generating control signals for switching between a first operating mode, which does not maintain a communication connection during a cell reselection, and a second operating mode, which does
20 maintain a communication connection during a handover, prior to the time that the need for a cell reselection is predicted.

19. A communication controller in accordance with claim 18 wherein the multi-mode controller is further adapted for generating control signals for switching from
25 the second operating mode to the first operating mode after handover is completed.

20. A communication controller in accordance with claim 18 wherein the cell reselection predictor has an input for receiving one or more of signal quality measurements and reselection criteria for one or more signals received from at least
30 one of a serving cell and one or more neighboring cells.

21. A communication controller in accordance with claim 18 wherein the multimode controller includes a state controller including at least one of logic circuitry and prestored programming instruction for implementing a state machine,
5 and a link management controller, which is adapted for managing a communication link in each of multiple operating modes.

22. A communication controller in accordance with claim 21 wherein the state machine of the multimode controller includes:
10 an idle state, corresponding to no active communication;
a packet mode state, corresponding to an active communication state when no reselection is at least one of occurring and pending; and
a circuit switched mode state, corresponding to an active communication state while a reselection is at least one of occurring and pending.

15 23. A communication controller in accordance with claim 22 wherein the current state of the state machine is adapted to change to the packet mode state upon initiation of a communication connection.

20 24. A communication controller in accordance with claim 22 wherein the current state of the state machine is adapted to change to the idle state upon termination of a communication connection.

25 25. A communication controller in accordance with claim 22 wherein the current state of the state machine is adapted to change to the circuit switched mode state prior to initiation of a cell reselection.

26. A communication controller in accordance with claim 22 wherein the current state of the state machine is adapted to change to the packet mode state upon
30 completion of a handover.

27. A communication controller in accordance with claim 18 wherein the handover controller is adapted for producing control signals for managing a handover, after a connection is established in the second operating mode.

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28. A communication controller in accordance with claim 18 wherein the first operating mode is a packet data communication mode.

29. A communication controller in accordance with claim 18 wherein the second
10 operating mode is a circuit switched communication mode.

30. A communication controller in accordance with claim 18 wherein the communication connection includes voice data communicated as part of a push to talk (PTT) call session.

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31. A communication controller in accordance with claim 18 wherein the communication connection includes voice data communicated as part of a voice over internet protocol (VoIP) call session.

20 32. A communication controller in accordance with claim 18 wherein the multimode controller further includes a protocol converter, which is adapted for selectively converting the format of the information to be transmitted and information received between a format supporting the first operating mode and a format supporting the second operating mode.

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33. A communication controller in accordance with claim 18 incorporated as part of a mobile communication device.

34. A communication controller in accordance with claim 33 wherein the mobile
30 communication device is a cellular telephone.

35. A base station subsystem for use in a wireless communication system coupled to a first network supporting a first communication protocol and a second network supporting a second communication protocol comprising:

- 5 a wireless interface including one or more wireless transceivers;
 a protocol converter coupled to the wireless interface for at least one of transmitting and receiving information in at least one of the first communication protocol and the second communication protocol, wherein the protocol converter is adapted for selectively converting the format of the transmitted and received
10 information between the first communication protocol and the second communication protocol.

36. A base station controller in accordance with claim 35 wherein the first network is a packet data network and the second network is a circuit switched
15 network.

37. A base station controller in accordance with claim 35 wherein the protocol converter is coupled to the first network

20 38. A base station controller in accordance with claim 37 wherein information received in the second communication protocol via the wireless interface is converted to the first communication protocol prior to being conveyed to the first network.

39. A base station controller in accordance with claim 37 further comprising an
25 input for receiving a multimode control signal for selectively controlling the conversion of information received from the first network in the first communication protocol prior to being conveyed by the wireless interface to a wireless device.

40. A base station controller in accordance with claim 39 wherein the multimode
30 control signal is in a first state, which disables conversion of the information received

from the first network, when the wireless interface is communicating with a wireless device operating in a first communication mode using the first communication protocol.

- 5 41. A base station controller in accordance with claim 39 wherein the multimode control signal is in a second state, which enables conversion of the information received from the first network, when the wireless interface is communicating with a wireless device operating in a second communication mode using the second communication protocol.